

## CLAIMS

### WHAT IS CLAIMED IS:

1. A method for recovering much of the carbon and chlorine value from the heavy ends and  
5 other undesired by-products formed during the production of a C<sub>3</sub> or higher polychlorinated  
alkane by the reaction of carbon tetrachloride and an olefine or chlorinated olefine, the  
improvement comprising the step of first separating the heavy ends and any other higher or  
lower boiling chlorohydro-carbon impurities from most of the desired product, and  
subjecting the separated heavy ends and impurities therewith to a high temperature  
10 exhaustive chlorination process to produce carbon tetrachloride, tetrachloroethene, and minor  
amounts of hexachlorobutadiene and hexachlorobenzene by-products.
2. The method of claim 1 wherein the high temperature exhaustive chlorination is conducted  
between 500 and 700 ° C.
- 15 3. The method of claim 2 wherein the pressure during exhaustive chlorination is between  
atmospheric and 100 psig.
4. The method of claim 3 wherein the process during exhaustive chlorination is carried out at  
20 about 600° C and at about 30 psig.

5. The method of claim 1 wherein the production of the C<sub>3</sub> or higher polychlorinated alkane is by the catalytic addition of carbon tetrachloride to an olefine or chlorinated olefine.

6. The method of claim 5 wherein the olefine is ethene.

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7. The method of claim 5 wherein the chlorinated olefine is a member of the group consisting of chloroethylene, dichloroethylene, trichloroethylene and tetrachloroethylene and tetrachloroethylene.

10 8. The method of claim 1 wherein the high temperature exhaustive chlorination process to produce carbon tetrachloride and tetrachloroethene and minor amounts of hexachlorobutadiene and hexachlorobenzene by products is either catalytic or non-catalytic.

9. The method of claim 1 wherein the carbon tetrachloride is purified by distillation and  
15 returned to the reactor as feed material for further production of the desired C<sub>3</sub> or higher polychlorinated alkane.

10. The method of claim 1 wherein heavy ends from the process to produce a C<sub>3</sub> or higher polychlorinated hydrocarbon contains a substantial portion of the desired C<sub>3</sub> or higher  
20 polychlorinated hydrocarbon due to inefficiencies in the purification steps and is subjected to high temperature exhaustive chlorination without further effort to remove the remainder of the desired C<sub>3</sub> or higher polychlorinated hydrocarbon.

11. The method of claim 1 wherein the heavy ends from the process to produce a C<sub>3</sub> or higher polychlorinated hydrocarbon is subjected to the high temperature exhaustive chlorination alone, or mixed with other hydrocarbon or chlorohydrocarbon feed materials.

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12. The method of claim 11 wherein the heavy ends are mixed with other C<sub>1</sub> to C<sub>3</sub> hydrocarbons or chlorohydrocarbons, to minimize the formation of unwanted by-products in the exhaustive chlorination step.

10 13. The method of claim 1 wherein other hydrocarbons or chlorinated hydrocarbons are added to the heavy ends containing the undesired chloro-compounds.

14. The process of claim 1 wherein the process is maximized to produce carbon tetrachloride.

15 15. The process of claim 1 wherein the carbon tetrachloride is further purified.

16. The process of claim 1 wherein the carbon tetrachloride is returned to the reactor to further react with the olefine or chlorinated olefine.